DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 3/17/08 have been fully considered but they are not persuasive.

With respect to applicant's argument regarding claims 1-5, 7-8, 12-18, and 20 rejected under 35 U.S.C. 102(b) as being anticipated by Trinh (US 5,204,637), the examiner respectfully disagrees.

The applicant submits that the Trinh reference does not specifically disclose the limitations directed to reducing the drive level or increasing the supply voltage of the RF power output unit. However the limitation of ".... or increasing the supply voltage" is broadly interpreted as controlling of the Supply voltage source of the system. The Trinh reference discloses a supply voltage (Vs) connected to bias driver 36. The Trinh reference continues to disclose wherein the bias driver 36 produces a bias srive control signal 38 based on the error voltage 34. Thus control signal 38 based on the error signal and the supply voltage is controlling amplifier 12 output. the Variable coupling network 52 samples the power output from point 16. As disclosed by Trinh, Col.???? when operating in high power settings to limit the power in order to prevent the diode power detector 24 from saturating, the microcontroller 28 to provide high isolation in between, thereby increasing power transfer when power is needed most.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1-5, 7-8, 12-18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Trinh (US 5,204,637).

With respect to claim 1 and 12, Trinh, Fig.2 discloses the method and circuit for preserving linearity of a RF power amplifier, the power amplifier element 50 including a RF power output unit having a characteristic drive level and fed by a supply voltage 12, (Col.3 line 50-57) comprising: measuring the output voltage of the RF power output unit with power detector circuit 32; comparing the measured output voltage to at least one threshold voltage 30 to produce a control signal thru bias driver 36; (Col.3 line 38-49) and reducing the drive level or the supply voltage of the RF power output unit by means of the control signal to operate the output unit below its saturation level of the power controller. (Col.1 line 39-58)

With respect to claims 2 and 13, Trinh discloses the method and circuit of claim 1 and 12 wherein the power amplifier includes a variable gain preamplifier 13 supplying the drive voltage to the RF power output unit and wherein the control signal 38 from bias control circuit 36 is used to adapt the gain of the preamplifier. (Col.3 line 38-49)

With respect to claims 3 and 14, Trinh discloses the method and circuit of claims 2 and 12, wherein the control signal 38 is combined with the gain control signal of the preamplifier 13. (Col.3 line 38-49)

With respect to claim 4, Trinh discloses the method for controlling an antenna circuit Fig.2 comprising a RF power amplifier 12 the power amplifier 12 comprising a RF power output unit having a characteristic drive and fed by a supply voltage source (13.8V), comprising: measuring the output voltage with power of the RF power output unit with Voltage comparator unit 32; comparing the measured output voltage to at least one threshold voltage 30 to produce a control signal 38 through bias control signal circuit 36; (Col.3 line 38-49) and adapting the output matching circuit 32, 33, and 34 by means of the control signal through bias controls signal circuit 51 to operate the output unit below its saturation level. (Col.3 line 38-49)

With respect to claim 5, Trinh discloses the method of claim 4, wherein the adapting of the output matching circuit is done by changing either the magnitude or the phase of the impedance transform function through the detection signal which changes the magnitude of the transform signal. (Col.5 line 46-53)

With respect to claims 7 and 17, Trinh discloses the method of claim 1 and 12, wherein the output voltage of the RF power output unit is rectified, with diode 22 before being compared to the threshold voltage. (Col.4 line 66-Col.5 line 3)

With respect to claims 8 and 18, Trinh discloses the method of claim 1 and 12, wherein the output voltage of the RF power output unit Fig.2 is compared to the threshold voltage by means of an operational amplifier 32. (Col.6 lines 17-23)

With respect to claim 15, Trinh discloses the circuit for stabilizing an antenna circuit comprising a RF power amplifier Fig.2 12 and a matching circuit, wherein the RF power amplifier 12 comprises a RF power output unit having a characteristic drive level comprising a measuring unit 16; (Col.3 line 50-57) measuring the output voltage of the RF power output unit 12; a comparing unit 32 comparing the measured output voltage of the RF power output unit 12 to a threshold voltage 30 to produce a control signal 38; (Col.3 line 38-49) a drive level adaptation unit adapting the output matching circuit by means of the control signal thereby adapting the drive level of the RF power output unit to operate the RF output unit below its saturation level for preserving linearity of the RF power amplifier. (Col.1 line 39-58)

With respect to claim 20, Trinh discloses an apparatus, Fig.2 comprising a circuit as claimed in claim 12.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Trinh (US 5,204,637) in view Ichikawa (US 6,532,357).

With respect to claim 6, Chen discloses the method of claim 4, wherein the adapting of the output matching circuit 32, 33, and 34, however the Chen reference does not disclose the adapting of the supply voltage are combined with a power amplifier efficiency optimization in case of a multiple threshold detection by an analog-to-digital converter.

The Ichikawa reference however discloses wherein a analog to digital converter 15 is used to transmit digital signals regarding the values detected by power detection unit 24, and transmitting control signals back to the baseband processor16, which in turn controls the amplifier 19 based on the threshold value. (Col.7 lines 8-24)

It would have been obvious to one of ordinary skill in the art to implement the analog to digital converter as disclosed by Ichikawa with the method of preserving linearity as disclosed by Chen in order to operate in the baseband environment and converting analog power detection signals to digital and process the information using a baseband processor.

6. Claims 9, 10, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trinh (US 5,204,637) in view of Nishihori (US 6,164,424).

With respect to claims 9 and 19, Trinh discloses the method of claim 8 and 18, wherein the output voltage of the RF power output unit is compared in at least two parallel operational amplifiers to threshold voltages to produce at least control signals, however Chen does not disclose wherein the at least two control signals are fed to the base-band controller.

The Nishihori reference however discloses wherein a baseband processor 15 wherein control signals are being sent into to process RF signals converter to IF.

It would have been obvious to one of ordinary skill in the art to implement the Baseband processor as disclosed by Nishihori with the method of preserving linearity as disclosed by Chen in order to further process the RF signals received in the Chen reference and process it further in baseband environment.

With respect to claim 10, Trinh and Nishihori combined disclose the method of claim 9, however Trinh discloses wherein the at least two threshold voltages have different voltage levels. (Col.3 line 39-49)

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Trinh (US 5,204,637) in view of Kurokawa (US 6,678,507).

With respect to claim 11, Trinh discloses the method of claim 1, however Trinh does not specifically disclose wherein the supply voltage is adapted by a programmable DC-DC converter controlled by a base-band controller which is fed by the control signal.

The Kurokawa reference however discloses wherein a DC-DC converter to generate from a positive power supply a negative voltage for use as the negative power supply (Col.1 lines 54-65) and wherein a baseband processor BBU is used to control the preamplifier of the receiver circuit. (Col.10 lines 42-52)

It would have been obvious to one of ordinary skill in the art to implement the DC-DC converter and baseband processor as disclosed by Kurokawa with the linearity system as disclosed by Trinh in order to obtain a regulated power signal.

Allowable Subject Matter

8. Claims 21-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 21 and 23 discloses wherein the RF power unit is a transistor having a base terminal connected to an output terminal of a driver unit providing the drive level and a collector terminal connected to the supply voltage through an inductance, the output being measure at the transistor collector terminal.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RICHARD CHAN whose telephone number is (571)272-0570. The examiner can normally be reached on Mon - Fri (9AM - 5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571)272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Richard Chan/
Examiner, Art Unit 2618

/Nay A. Maung/
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